BLOODBORNE PATHOGENS TRAINING

Updated 09/04

PURPOSE

To assist federal dental facilities in understanding and complying with the Federal Occupational Safety and Health Administration's (OSHA) Standard for Occupational Exposure to Bloodborne Pathogens.

Abbreviations Used in This Briefing

- AIDS Acquired Immune Deficiency Syndrome
- BBP Bloodborne Pathogens

- DHCP Dental Health-Care Personnel
- HBV Hepatitis B Virus
- HCV Hepatitis C Virus

Abbreviations Used in This Briefing

- HIV Human Immunodeficiency Virus
- OPIM Other Potentially Infectious Material
- OSHA Occupational Safety & Health Administration
- PPE Personal Protective Equipment

OSHA STANDARD

- **Protects employees**
  - **Dentists**
  - **Dental Assistants**
  - **Dental Hygienists**
  - **Laboratory technicians**
  - **Any individual who may have occupational exposure to BBP**

BBP STANDARD

- Employer responsibilities
  - Explain the content
  - Ensure access to copy of the regulatory text
    - Consider giving each member a copy

OCCUPATIONAL EXPOSURE

- Reasonably anticipated skin, eye, mucous membrane, or puncture wound (parenteral) contact with blood or OPIM that may result from the performance of employee duties.

BLOODBORNE PATHOGENS

- Pathogenic microorganisms that are present in human blood and can cause disease in humans.
  - Examples include Hepatitis B virus, Hepatitis C Virus, Human Immunodeficiency Virus

Other Potentially Infectious Materials (OPIM)

- Human body fluids
  - Saliva, semen, vaginal secretions, CSF, unfixed tissues, any body fluid visibly contaminated with blood

Hepatitis B Virus (HBV), Hepatiti C Virus (HCV), and Human Immunodeficiency Virus (HIV)

- Bloodborne viruses
- Can produce chronic infection
- Transmissible in health-care settings
- Data from multiple sources (e.g., surveillance, observational studies, serosurveys) used to assess risk of occupational transmission

BBP TRANSMISSION Overview

- Sexual contact
- Sharing needles or syringes
- From infected mother to baby
- Blood transfusion
- Organ transplant
- Not transmitted through casual contact

BBP TRANSMISSION

- **Dental setting**
  - **Needlestick or puncture wound (parenteral)**
  - **Blood (HBV/HIV) or saliva (HBV) contact with mucous membrane, or non-intact skin**
- **HBV more concentrated in blood than HIV.**
  - **Higher potential for transmission**
- **HCV inefficiently transmitted by occupational exposures.**

Viral Hepatitis—Overvie

TYPES OF HEPATITIS

	A	B	C	D	E
Source of virus	feces	blood/ blood-derived body fluids	blood/ blood-derived body fluids	blood/ blood-derived body fluids	feces
Route of transmission	fecal-oral	percutaneous permucosal	percutaneous permucosal	percutaneous permucosal	fecal-oral
Chronic infection	no	yes	yes	yes	no
Prevention	pre/post-exposure immunization	pre/post-exposure immunization	blood donor screening; risk behavior modification	pre/post-exposure immunization; risk behavior modification	ensure safe drinking water

HBV SYMPTOMS

- About 30% of persons have no signs or symptoms.
- Signs and symptoms are less common in children than adults.

- jaundice
- fatigue
- abdominal pain
- loss of appetite
- nausea, vomiting
- joint pain

HBV TRANSMISSION

- Occurs when blood or body fluids from an infected person enters the body of a person who is not immune.
- HBV is spread through
  - sexual contact with an infected person,
  - sharing needles/syringes,
  - needlesticks or sharps exposures on the job, or
  - from an infected mother to her baby during birth.

HBV TRENDS/STATISTICS

- Number of new infections per year has declined from an average of 260,000 in the 1980s to about 78,000 in 2001.
- Highest rate of disease occurs in 20-49-year-olds.
- Greatest decline has happened among children and adolescents due to routine hepatitis B vaccination.
- Estimated 1.25 million chronically infected Americans, of whom 20-30% acquired their infection in childhood.

www.cdc.gov/ncidod/diseases/hepatitis/b/fact.htm

HCV SYMPTOMS

- 80% of persons have no signs or symptoms.

- jaundice
- fatigue
- dark urine
- abdominal pain
- loss of appetite
- nausea

HCV TRANSMISSION

- Occurs when blood or body fluids from an infected person enters the body of a person who is not infected.
- HCV is spread through
  - sharing needles/syringes,
  - needlesticks or sharps exposures on the job, or
  - from an infected mother to her baby during birth.

HCV TRENDS/STATISTICS

- Number of new infections per year has declined from an average of 240,000 in the 1980s to about 25,000 in 2001.
- Most infections are due to illegal injection drug use.
- Transfusion-associated cases occurred prior to blood donor screening; now occurs in less than one per million transfused unit of blood.
- Estimated 3.9 million (1.8%) Americans have been infected with HCV, of whom 2.7 million are chronically infected.

www.cdc.gov/ncidod/diseases/hepatitis/c/fact.htm

HIV SYMPTOMS

- Many people do not have any symptoms when they first become infected with HIV. Some people, however, have a flu-like illness within a month or two after exposure to the virus.
- These symptoms usually disappear within a week to a month and are often mistaken for those of another viral infection. During this period, people are very infectious, and HIV is present in large quantities in genital fluids.

HIV/AIDS SYMPTOMS

- **Varying symptoms**
  - **No symptoms to flu-like symptoms**
  - **Fever, lymph node swelling, rash, fatigue, diarrhea, joint pain**
- **Many people who are infected with HIV do not have any symptoms at all for many years.**
- **Will develop AIDS**
  - **Weight loss, night sweats, diarrhea, loss of appetite, rash, lymph node swelling**
  - **Lack of resistance to disease**

HIV TRANSMISSION

- HIV is spread by
  - sexual contact with an infected person,
  - sharing needles/syringes,
  - needlesticks or sharps exposures on the job.
  - Less commonly (and now very rarely in countries where blood is screened for HIV antibodies), through transfusions of infected blood or blood clotting factors.
  - Babies born to HIV-infected women may become infected before or during birth or through breast-feeding after birth.

HIV STATISTICS

- **<u>United States</u>: The estimated number of diagnoses of AIDS through 2002 in the United States is 886,575. Adult and adolescent AIDS cases total 877,275 with 718,002 cases in males and 159,271 cases in females. Through the same time period, 9,300 AIDS cases were estimated in children under age 13.**
  - Estimated number of deaths of persons with AIDS is 501,669, including 496,354 adults and adolescents, and 5,315 children under age 15.
- **Worldwide:According to the Joint United Nations Programme on HIV/AIDS: At the global level, the number of people living with HIV continues to grow - from 35 million in 2001 to 38 million in 2003.**
  - In 2003, almost three million were killed by AIDS; over 20 million have died since the first cases of AIDS were identified in 1981.

www.cdc.gov/hiv/stats.htm

Average Risk of Transmission after Percutaneous Injury

Source	Risk (%)
HIV	0.3
Hepatitis C	1.8
Hepatitis B (only HBeAg+)	30.0

Preventing Transmission of Bloodborne Viruses in Health-Care Settings

- Promote hepatitis B vaccination
- Treat all blood as potentially infectious
- Use barriers to prevent blood contact
- Prevent percutaneous injuries
- Safely dispose of sharps and b
  contaminated materia

Prevention is Primary

EXPOSURE CONTROL PLAN

- Written Document
- Accessible to all DHCP
- Update at least annually
  - Or when alterations in procedures create new occupational hazards
  - May want to distribute a copy to all staff

EXPOSURE CONTROL PLAN

- **KEY ELEMENTS**
  - Identification of job classifications/tasks where there is exposure to blood/OPIM.
  - Schedule of how/when provisions of standard will be implemented.
  - Methods of communicating hazards to DHCP.
  - Need for Hepatitis B vaccination.
  - Postexposure evaluation and follow-up.

EXPOSURE CONTROL PLAN

- **KEY ELEMENTS**
  - Recordkeeping/compliance methods
    - Engineering/work practice controls
    - Personal protective equipment (PPE)
    - Housekeeping
  - Procedures for postexposure evaluation and follow-up

OCCUPATIONAL EXPOSURE

- Based on exposure without regard to use of PPE
- Review job classifications–2 groups
  1. Occupational exposure for all job tasks
     - Not necessary to list specific job tasks
  2. Occupational exposure for some job tasks
     - Job tasks must be listed (e.g., receptionist fills in as an assistant)

TRAINING

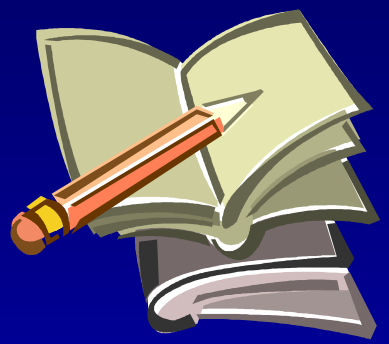
- **Initial training**
  - **Provided at time of initial assignment to tasks with occupational exposure or when job tasks change.**
- **Annual refresher training**

TRAINING REQUIREMENTS

- No cost to DHCP
- During working hours
- Comprehensive, but appropriate
- Opportunity for questions and answers
- Knowledgeable instructors

TRAINING RECORDS

- Document each training session
  - Date of training
  - Content outline
  - Trainer's name and qualifications
  - Names and job titles of attendees
- Must be kept by the employer for 3 years.



PROGRAM

- Communicate hazards
- Identify/control hazards
- Preventive measures
  - Hepatitis B vaccine
  - Standard precautions
  - Engineering controls
  - Safe work practices
  - PPE
  - Housekeeping

HEPATITIS B VACCINATION

- Effective in preventing hepatitis B
  - 95% develop immunity
- 3-dose vaccination series
- Test for antibodies to HBsAg 1 to 2 months after 3-dose vaccination series completed.
- Revaccinate DHCP who do not develop adequate antibody response.

HEPATITIS B VACCINATION

- Safe, effective, and long-lasting
- Booster doses of vaccine and periodic serologic testing to monitor antibody concentrations after completion of the vaccine series are not necessary for vaccine responders.

HEPATITIS B VACCINATION

- Must be made available within 10 working days of initial assignment
  - For individuals whose job tasks may result in occupational exposure (mandatory active duty)
- No cost to DHCP
- Available at a reasonable time and place

HEPATITIS B VACCINATION

- Provided by a licensed health-care professional
- If decline–must sign statement

STANDARD PRECAUTIONS

- Treat all human blood/OPIM as if infectious.
- Most important measure to control transmission.
- Blood and saliva are considered potentially infectious materials.
  - Can cause contamination to items/surfaces

CONTROL MEASURES

- Engineering and work practice controls
  - Primary methods used to control transmission of HBV/HIV
- PPE required when occupational exposure to BBP remains after instituting these controls.

ENGINEERING CONTROLS

- Primary strategy for protection of DHCP and patients.
- Eliminate or isolate hazard
- Examples:
  - Puncture resistant sharps contain
  - Safer medical devices
    - Sharps with engineered sharps injury protection and needleless systems

“Sharps with engineered sharps injury protection”

- **Non-needle sharp or needle device**
  - **Used for withdrawing body fluids**
  - **Accessing a vein or artery**
  - **Administering medications/fluids**
  - **With built-in safety feature/mechanism that reduces risk of exposure incident**

ENGINEERING CONTROLS

- Commonly used in combination with work practice controls and PPE to prevent exposure.
- Must be examined, maintained or replaced on scheduled basis.

ENGINEERING CONTROLS

- 2001 OSHA revised the BBP Standard
- Employers should identify, evaluate, and select engineering and work practice controls (e.g., evaluating safer dental devices) as they become available and involve employees directly responsible for patient care (e.g., dentists, hygienists, and dental assistants) in identifying and choosing such devices.

ENGINEERING CONTROLS Summary

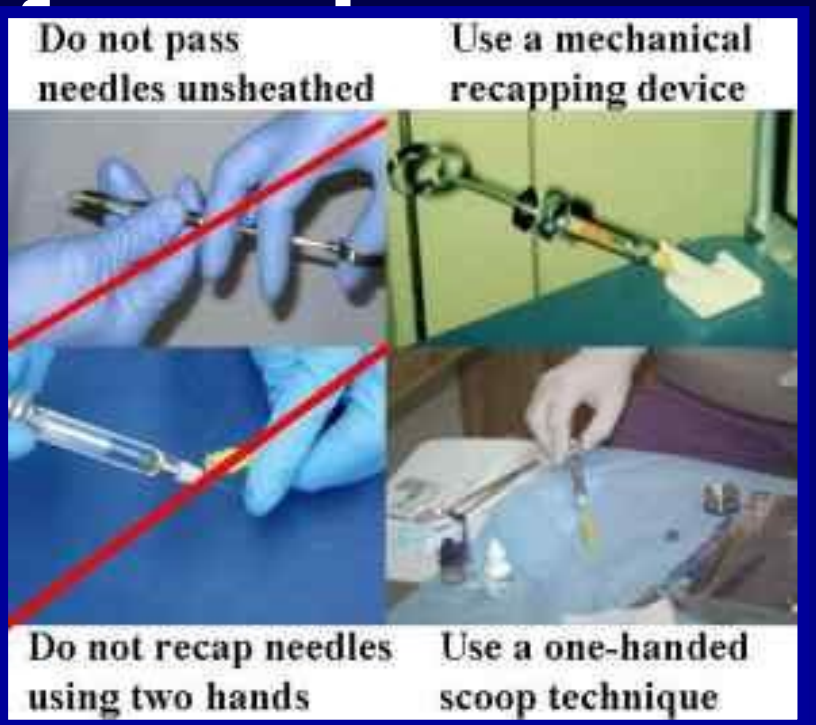
- **Employers must consider (annually), and where appropriate, use effective engineering controls.**
  - **Including safer medical devices**
    - **To reduce risk of injury from needlesticks and sharp instruments**
  - **Documented in Exposure Control Plan.**
  - **Requires effective education for employees when safer devices are implemented.**

EXPOSURE CONTROL PLAN Summary

- Employers must implement safer medical devices
  - Appropriate, commercially available, and effective
- Appropriate
  - Based on reasonable judgment in individual cases, will not jeopardize patient/employee safety or be medically compromised
- Effective
  - Based on reasonable judgment, will reduce the likelihood of an exposure incident involving a contaminated sharp

WORK PRACTICE CONTROLS

- Reduce likelihood of exposure by altering the manner in which task is per


Do not pass needles unsheathed
Use a mechanical recapping device
Do not recap needles using two hands
Use a one-handed scoop technique

WORK PRACTICE CONTROLS Examples

- Placing used disposable syringes & needles, scalpel blades & other sharp items in puncture-resistant containers located as close as practical to the point of use.
- Using a one-handed “scoop” technique or a mechanical device to facilitate needle recapping.
- Using engineered sharps injury protection devices during use or disposal.

WORK PRACTICE REQUIREMENTS

- Wash hands immediately after skin contact with blood/OPIM, and after removing gloves or other PPE.
- Flush mucous membranes immediately if splashed with blood/OPIM.
- Do not bend or break needles before disposal.
- Recap needles with a one-handed technique prior to removal from non-disposable aspirating syringes.

WORK PRACTICE REQUIREMENTS

- Discard disposable sharps (e.g., endo files, ortho wires, anesthetic/suture needles) in designated sharps container.
  - Closable, puncture resistant, leakproof, colored red or labeled with biohazard symbol

WORK PRACTICE REQUIREMENTS

- Place contaminated, reusable sharp instruments in containers that are puncture-resistant, leakproof, colored red or labeled with biohazard symbol until reprocessed.
- Do not store or process instruments in a way that would require DHCP to reach by hand into container to retrieve instruments.

WORK PRACTICE REQUIREMENTS

- Do not eat, drink, smoke, apply cosmetics or handle contact lenses in areas where there is risk for occupational exposure.
- Do not store food/drinks in refrigerators, cabinets, shelves or countertops where blood/OPIM are present.

WORK PRACTICE REQUIREMENTS

- Store, transport or ship blood/OPIM materials (e.g., extracted teeth, tissues, contaminated impressions) in puncture- resistant biohazard containers.
- Close containers immediately prior to removal or replacement to prevent spillage or protrusion of contents during handling, storage, or transport

PPE

- Specialized clothing or equipment to protect the skin, mucous membranes of the eyes, nose, and mouth of DHCP from exposure to infectious or potentially infectious materials.
- Must not allow blood/OPIM to pass through clothing, skin or mucous membrane.

PPE

- Gloves
- Surgical mask
- Long-sleeved protective clothing (e.g., long-sleeved lab coat, gown)
- Protective eyewear with solid side shields
- Chin-length face shield worn with a surgical mask

PPE

- Based on degree of anticipated exposure and procedure performed.
- Remove PPE prior to leaving work area and immediately if penetrated by blood/OPIM.

GLOVES

- Wear gloves when contact with blood or OPIM possible.
- Remove gloves after caring for a patient.
- Do not wear the same pair of gloves for the care of more than one patient.
- Do not wash or disinfect gl

GLOVES

- Do not use petroleum-based hand lotions with latex gloves (causes deterioration of the glove material).
- Removal: grasp at wrist and strip off “inside-out”.

UTILITY GLOVES

- Used for cleaning instruments, surfaces, handling laundry, or housekeeping.
- May be washed, autoclaved, or disinfected and reused as long as integrity is not compromised.
- After washing with soap, pull off by finger tips.

SURGICAL MASKS

- Adjust so fits snugly.
- Change between patients or during treatment if it becomes wet.
- Removal:
  - Remove by elastic or ti
  - Do not touch mask

PROTECTIVE EYEWEAR

- Wear when splash, spray, or spatter is anticipated.
- Eyewear must have solid side shields.
- Remove by headband or side arms.
  - Do not touch shield or lens area.
- May be decontaminated and reused.
- A chin-length face shield may be worn with a mask if additional protection is desired.

PROTECTIVE CLOTHING

- Long sleeves required by OSHA if worn as PPE.
- Wear when splash, spray, or spatter is anticipated.
- Remove immediately if penetrated by blood/OPIM.
  - Use tie strings to remove and peel off.
  - Minimize contact during removal.
- If reusable, place in marked laundry container.

PPE

- **Employer responsibility**
  - **Will provide, maintain, and replace**
  - **Ensure accessibility in appropriate sizes**
  - **Provide alternative products (e.g., latex-free gloves, powderless gloves, glove liners)**
  - **Will ensure employee use**
  - **Launder or discard if appropriate**

CONTAMINATED LAUNDRY

- Minimal handling
- Placed in bags or containers that are red or marked with biohazard symbol.
- If clinic uses Standard Precautions in handling soiled laundry
  - Alternative labeling is permitted
  - Ensure all employees are trained, and recognize bags contain contaminated laundry

CONTAMINATED LAUNDRY

- Laundry sent off-site
  - Placed in bags or containers that are clearly marked with biohazard symbol, unless laundry facility uses Standard Precautions.
- If wet, bags or containers must prevent leakage and soak-through.
- Use appropriate PPE when handling.

HOUSEKEEPING

- Employer must ensure clean/sanitary workplace.
- Work surfaces, equipment, and other reusable items must be decontaminated upon completion of procedure when contaminated with blood/OPIM.
- Barriers protecting surfaces/equipment must be replaced when contaminated or at end of the work shift.

HOUSEKEEPING

- Reusable receptacles (bins, pails, cans)
  - Must be inspected/decontaminated on a regular basis and when visibly soiled.
- Broken glass that may be contaminated
  - May be cleaned up with brush/tongs.
  - Never picked up with hands, even if gloves are worn.
- Contaminated equipment must be decontaminated prior to servicing or labeled as biohazard.

WASTE

- May be regulated by a combination of local, state, and federal laws.

REGULATED WASTE

- Liquid or semi-liquid blood or OPIM
- Items contaminated with blood/OPIM that would release these substances in a liquid or semi-liquid state if squeezed
- Items that are caked with dried blood/OPIM and capable of releasing these materials during handling
- Contaminated sharps
- Pathological /microbiological waste containing blood/OPIM (e.g., extracted teeth)

REGULATED WASTE DISPOSAL

- **Sharps**
  - **Place in container that is closable, puncture-resistant, leakproof, and colored red or labeled with the biohazard symbol.**
- **Other regulated waste**
  - **Must be contained in closable bags or containers that prevent leakage, and colored red or labeled with the biohazard symbol.**
  - **If contaminated on outside, use secondary container with same features.**

BIOHAZARD LABEL

- Symbol accompanied by word *BIOHAZARD*
- Must be fluorescent orange or orange/red with lettering and symbols in contrasting colors.
- Red or orange/red bags or containers may substitute for labels.
- Decontaminated regulated waste d not need to be labeled or placed in bags.

BIOHAZARD LABEL

- Sharps container
- Regulated waste container
- Contaminated laundry bags
- Refrigerators/freezers containing blood or OPIM
- Containers used to ship blood/OPIM
- Contaminated equipment

Postexposure Management

- Goal: prevent infection after an occupational exposure incident to blood
- A qualified health-care professional should evaluate any occupational exposure to blood or OPIM including saliva, regardless of whether blood is visible, in dental settings.

Updated U.S. Public Health Service Guidelines for the Management of Occupational Exposures to HBV, HCV, and HIV and Recommendations for Postexposure Prophylaxis

CDC. MMWR 2001;50(RR-11)

www.cdc.gov/mmwr/PDF/rr/rr5011.pdf

EXPOSURE INCIDENT

- Specific eye, mouth, other mucous membrane, non-intact skin or parenteral contact with blood/OPIM resulting from performance duties.
- Employer
  - Responsible for establishing procedure for evaluating exposure incident.
  - Thorough assessment and confidentiality are critical.

Postexposure Management Overview

- Immediately report exposure incident to initiate timely follow-up process by health-care professional.
- Exposed individual must be directed to a qualified health-care professional.
- Initiate prompt request for evaluation of source individual's HBV/HCV/HIV status.

Postexposure Management: Wound Care

- Clean wounds with soap and water.
- Flush mucous membranes with water.
- No evidence of benefit for:
  - application of antiseptics or disinfectants.
  - squeezing (“milking”) puncture site
- Avoid use of bleach and other agents caustic to skin.

Postexposure Management: The Exposure Report

- Date and time of exposure
- Procedure details…what, where, how, with what device
- Exposure details…route, body substance involved, volume/duration of contact
- Information about source person
- Information about the exposed person
- Exposure management details

Postexposure Management: Assessment of Infection Risk

- Type of exposure
  - **Percutaneous**
  - **Mucous membrane**
  - **Non-intact skin**
  - **Bites resulting in blood exposure**
- Body substance
  - **Blood**
  - **Bloody fluid**
  - **Potentially infectious fluid or tissue**
- Source evaluation
  - **Presence of HBsAg**
  - **Presence of HCV antibody**
  - **Presence of HIV antibody**
  - **If source unknown, assess epidemiologic evidence**

Postexposure Management: Unknown or Untestable Source

- Consider information about exposure
  - Where and under what circumstances
  - Prevalence of HBV, HCV, or HIV in the population group
- Testing of needles and other sharp instruments not recommended
  - Unknown reliability and interpretation of findings
  - Hazard of handling sharp

Postexposure Management: Evaluating the Source

- If the HBV, HCV, and/or HIV status of the source is unknown, testing should be done.
- Testing should be performed as soon as possible.
- Consult your laboratory regarding most appropriate test to expedite obtaining results.
- Informed consent should be obtained in accordance with state and local laws.

RECORDKEEPING

- Maintain a sharps injury log
  - In the USAF, this is usually maintained by Public Health or the Medical Treatment Facility's Infection Control Section.
  - Type/brand of device involved in incident
  - Work area where incident occurred
  - Explanation of how incident occurred

BLOOD SPILL

- Notify OIC/NCOIC of Infection Control/Safety section
- Don PPE
  - Gloves, mask, eyewear, protective apparel
- Use designated spill kit to clean and disinfect area

MEDICAL RECORDS

- Requirement for each employee with potential occupational exposure
- Confidential and separate from other personnel records
- Kept on-site or retained by HCP providing services to clinic
- Occupational exposure reports included
- Maintained for 30 years past last date of employment
- Confidentiality is critical

QUESTIONS

REFERENCES

- CDC. Updated US Public Health Service guidelines for the management of occupational exposures to HBV, HCV, and HIV and recommendations for postexposure prophylaxis. MMWR 2001;50(No. RR-11).
- *Occupational Exposure to Bloodborne Pathogens*, Title 29 CFR 1910.1030, Federal Register 56 (235): 64004-64182, December 6, 1991.

REFERENCES

- ***Occupational exposure to bloodborne pathogens; Needlestick and other sharps injuries; Final Rule.*** **Title 29 CFR Part 1910, Federal Register 66 (12): 5317-5325, January 18, 2001.**
- ***Occupational injury and illness recording and reporting requirements; Final Rule.*** **Title 29 CFR Parts 1904 and 1952, Federal Register 66 (13): 5916-6135, January 19, 2001.**

REFERENCES

- **OSHA Directive CPL 2-2.44D-** ***Enforcement Procedures for the Occupational Exposure to Bloodborne Pathogens*****, November 5, 1999.**
- **OSHA Brochure,** ***Medical and Dental Offices: A Guide to Compliance with OSHA Standards*****, 2003.**